

BATES (W. H.)

CONJUNCTIVITIS

AS A

CAUSE OF POOR VISION.

BY

W. H. BATES, M.D.,

Instructor in Diseases of the Eye, Post-Graduate Medical School.

[Reprinted from THE POST-GRADUATE, No. 6, 1892.]



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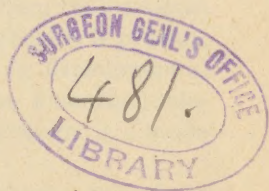
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THE irritation of a foreign body in the eye acts in many ways. Besides causing, in many cases, pain, intolerance of light, lachrymation, inability to read, other effects are produced which are worthy of note. A foreign body on the conjunctiva may not cause pain. Its presence may not be recognized. It may be lodged in the retrotarsal fold or elsewhere and the patient may not know that it is there. Sometimes the vision is poor by daylight. In other cases the vision is poor at night. The field may be contracted and scotoma present. What is true of the effects of a foreign body in the eye is also true of acute catarrhal or purulent conjunctivitis in their effects upon the vision. Chronic conjunctivitis and chronic trachoma may cause poor vision. The manner in which conjunctivitis causes poor vision varies. Sometimes the poor sight is due to the presence of mucus or of tears on the cornea. Sometimes it is due to the intolerance of daylight, producing a modified day blindness. In other cases artificial light is more irritating than daylight, and the effect of the irritation from artificial light is capable of producing in this way a modified form of night blindness.

That the field is contracted is shown by actual tests with the perimeter. And the patients themselves are conscious of this fact; they run into people because the vision is defective to one or the other side. The field is not always contracted from the irritation of a foreign body or from conjunctivitis; and where it is present, the contraction of the field is not absolute, as in detachment of the retina. The contraction of the field of vision from the irritation of a foreign body in the eye or from conjunctivitis is a modified contraction of the field.

A foreign body in the eye, will sometimes produce spasm of the accommodation. The vision will be impaired and concave glasses be necessary to bring the vision back to the normal; and inflammations of the conjunctiva seem capable of doing the same thing.

The degree of impairment of the vision from conjunctivitis, is

¹ Read before the Clinical Society of the Post-Graduate Medical School.

not in direct proportion to the severity of the inflammation. There are familiar examples of patients with severe conjunctivitis who suffer little or no pain from the effects of light and whose vision is perfectly good. A foreign body may or may not cause irritation. There are cases with a mild conjunctivitis who suffer intensely. The photophobia and lachrymation may be out of all proportion to the inflammation of the conjunctiva. In fact, the symptoms of conjunctivitis may be present—mucous discharge, eyes sticking together in the morning, a feeling of sand in the eyes, lachrymation, intolerance of light—and when the conjunctiva is examined it is found to be very slightly inflamed.

CASE I.—Seven years ago a medical student in good health, who was studying for his degree, found that he could not read by gas-light; later he was unable to read by daylight. He consulted Dr. Agnew, who examined him carefully for glasses and found that no glasses were required. Dr. Agnew advised that the conjunctiva be treated. The patient had no symptoms of conjunctivitis, except a slight redness of the conjunctiva which one could hardly call an inflammation. There was no discharge of mucus, no lachrymation, no photophobia. The patient could not see as well as formerly, and could not read for more than a few minutes. There was no disease of the nerve or retina. The treatment of the conjunctiva as if conjunctivitis were present, by means of local applications, etc., resulted in cure. The patient has since enjoyed normal vision.

Here was a case of impaired vision which seemed to be due to a conjunctivitis which was very slight.

A striking example of impaired vision from very slight redness of the conjunctiva was observed last winter. Vision was $\frac{1}{10}$ the normal in only one eye. No improvement by glasses. No disease of the nerve or retina. Treatment of the conjunctivitis improved the vision to the normal. In this case there was no swelling of the conjunctiva and the redness was very slight.

CASE II.—Miss K., aged nineteen, has retinitis pigmentosa. She suffers from night blindness to a marked degree. The field of both eyes decidedly contracted.

November 18th, 1891: Began treatment. Vision of both eyes $\frac{1}{2}$ the normal. Treatment consisted in the application of nitrate of silver to the conjunctiva of the eyelids about twice a week. There was no indication for such treatment, if the appearance of the conjunctiva was taken as a guide. There were no symptoms of conjunctivitis, such as mucous discharge, redness or swelling of the conjunctiva, etc.

February 12th, 1892: Vision is normal in both eyes. The night blindness is decidedly better, and there is marked improvement in the fields of both eyes.

CASE III.—Miss C., aged sixteen, began treatment December 5th, 1888. Vision of the right eye $\frac{1}{2}$ the normal. Vision of the left eye $\frac{2}{20}$. Chorio-retinitis pigmentosa. Posterior polar cataract. Floating bodies in the vitreous. Atrophy of both optic nerves. Suffers very much from night blindness. Field contracted very much in both eyes.

January 15th, 1889: Treatment of the conjunctivitis improved the vision up to R. E. $\frac{1}{2}$, L. E. $\frac{1}{10}$ the normal.

January 15th, 1892: Patient has been seen at intervals of several weeks. The visual fields of both eyes have improved very much. The night blindness is decidedly better. It is an interesting fact that the vision has not improved since the maximum improvement obtained three years ago.

CASE IV.—Mr. B. began treatment in January, 1888. Vision of both eyes about $\frac{1}{2}$ the normal. Chorio-retinitis pigmentosa with posterior capsular cataract. The fields of both eyes contracted to ten degrees. Night blindness very bad.

February 1st, 1892: Patient has been seen very frequently—almost every day—during the last four years. Treatment of the conjunctivitis has not given permanent improvement in the vision. At times vision is almost normal for a few moments only, $\frac{2}{20}$. The great benefit that the patient has derived from treatment of the conjunctivitis has been in the improvement of the field and the night blindness. The field is now almost normal. The night blindness has improved to such an extent that the patient can find his way on dark nights in a crowded street, where he formerly got around only with difficulty.

The improvement in the night blindness and the field is a great relief to these patients. A contracted field causes such patients to run into people walking along the street. It confuses the patient in crossing a street where there are wagons or cars coming in both directions. Mr. B. could not travel on the Elevated road before treatment. He had been run over several times when trying to cross the street. After the field had improved the patient was no longer timid and could ride on the "L." Night blindness added to a contracted field makes it almost an impossibility for such patients to walk out at night.

To sum up the effects of treatment in these three cases of retinitis pigmentosa, treatment of the conjunctiva improved the vision,

improved the visual fields, and lessened the night blindness. There was no change in the retinitis pigmentosa.

It seemed that the very slight amount of conjunctivitis that these patients had, was sufficient to account for the contracted fields and the night blindness. In neurotic individuals a very slight conjunctivitis will produce distressing symptoms, and conjunctivitis occurring in eyes weakened by retinitis pigmentosa may produce more decided blurring of the sight than in an eye with a healthy retina.

CASE V.—Miss W., aged thirty-one, has atrophy of both optic nerves. Specific history: She has received appropriate constitutional treatment with hypodermic injections of strychnine, without much relief.

June 20th, 1891: Vision of the right eye $\frac{5}{200}$, vision of the left eye normal, $\frac{20}{20}$. Field of vision contracted in both eyes, and the patient also suffers from day blindness. Color perception defective.

February 4th, 1892: Patient has had a bad cold. Vision now reduced in both eyes. Right eye has vision of movements of the hand. Vision of the left eye $\frac{2}{20}$. Although the vision is very much reduced, the field of vision is decidedly better. Day blindness and color perception also better. Constitutional treatment alone did not improve the visual fields. Constitutional treatment and treatment of the conjunctiva together, improved in both eyes the visual fields.

A study of this case, with a number of others during the last five years, has convinced me that conjunctivitis, when associated with atrophy of the optic nerve, has an influence in increasing the contraction of the field of vision, and that simple treatment of the conjunctiva will increase the field of vision after treatment of the optic nerve has failed.

February 16th, 1892: The vision has improved in both eyes. Vision of the right eye; counts fingers. Vision of the left eye $\frac{2}{40}$. Cocaine applied to the conjunctiva of the upper lids lowered the vision. Nitrate of silver applied to the conjunctiva of the upper lids improved the vision.

There are cases of chronic conjunctivitis which can be cured by glasses. Patients who are far-sighted, suffering from conjunctivitis, are often cured by wearing glasses to correct their error of refraction.

It is well known that glasses will often cure conjunctivitis. It may not be so well known that curing conjunctivitis will sometimes do away with the necessity of far-sighted glasses.

CASE VI.—Mrs. M., aged thirty, came to the New York Eye Infirmary complaining of poor vision. She was a dressmaker, and found that she could not see to do her work without her eyes tiring. Vision of both eyes $\frac{1}{2}$ the normal. With a convex 2 D. S. vision is normal. With these glasses she can do her sewing without fatigue. There is some redness of the palpebral conjunctiva. The eyes stick together in the morning a little. She was given local remedies to use at home. At the end of two weeks vision is normal, $\frac{2}{3}$, without glasses. Patient is able to work with comfort. The glasses which relieved her when she had the conjunctivitis now cause poor vision and asthenopia. The effect of curing the conjunctivitis was to render the manifest hypermetropia latent.

A great many school children are compelled to wear glasses. The cure of the conjunctivitis from which most of them suffer enables them to lay aside their glasses. The following case is an example:

CASE VII.—Ella H., aged twelve, anæmic, chronic conjunctivitis, unable to see the blackboard clearly, and has difficulty in reading.

February 24th, 1891: Under atropia, three days, has normal vision with a convex 2.5 D. S. Ordered convex 2 D. S. for constant wear. With these glasses the patient was comfortable. The sight for distance was now normal, and the patient could study without the eyes tiring.

May 1st, 1891: Still wearing the glasses. The eyes are comfortable. The conjunctivitis is still present, but is not so noticeable.

May 19th, 1891: The patient has no noticeable conjunctivitis. She cannot wear her glasses now, because she sees worse with them. Vision is normal. She can now read and study without the eyes becoming tired.

There are people who have a large amount of hypermetropia who do not know that they are far-sighted. The vision may be normal and with no trouble in reading. As high as +6 D. S. has been observed in a case aged thirty, and this large amount of hypermetropia caused the patient no inconvenience either in distant vision or in reading. And, on the other hand, low degrees of hypermetropia will produce severe headache, poor vision, and asthenopia. Again, there are children with hypermetropia, who are compelled to wear convex glasses in early life, who are able to lay them aside as they grow older. A study of these and other facts is encouraging, when the question of possible cure is considered. The treatment of the conjunctiva will relieve spasm of the accommodation and improve the vision of myopia very much.

CASE VIII.—Miss S., aged twenty-five, gives the following history: When twelve years old noticed that her sight was failing for distance. She believes the cause to have been excessive reading.

April 19th, 1881: When fourteen years old, after using atropine for six months to relieve her eyes from some inflammation not known now, she was ordered glasses, R. E. — $\frac{1}{30}$ s., L. E. — $\frac{1}{12}$ c. axis 180° .

In 1885, under atropine, stronger concave glasses were prescribed.

October 9th, 1890: No atropine; the strength of the glasses was again increased.

April 22d, 1891: No atropine; the glasses were increased in strength.

January 19th, 1892: Under atropine, six days, the record is: R. E. vision $\frac{1}{10}$, with -2.25 D. S. vision normal; L. E. vision $\frac{1}{7}$, with -1.25 D. S. = -75 D. C. 155° vision $\frac{2}{3}$. Atropine stopped.

January 27th, 1892: Began treatment of the conjunctivitis by means of local applications. No other treatment. Patient treated three times a week.

February 13th, 1892: Vision of the right eye improved to $\frac{1}{2}$, left eye to $\frac{3}{8}$, without glasses. The left eye has now as good vision without a glass as it formerly had with a concave glass. The redness of the conjunctiva is decidedly less. This patient had symptoms of progressive myopia, and was relieved by treatment of the conjunctiva, without having to stop her studies or alter her usual routine of life in any way.

Progressive myopia is and has been for years the bane of ophthalmology. Books have been written on its cause in school children, and much work done to find out some way to prevent it, but little has been done which is of practical value. Very little success has been had from preventive measures, and endeavors to stop the progress of the myopia have not met with much encouragement. In view of these facts it seems preposterous to claim that simple treatment of the conjunctiva will not only stop the progress of myopia, but will even lessen it after it has once begun. Yet the facts accumulated during the last seven years have strengthened me in the belief that much can be done to improve the vision of myopia without glasses by simple treatment, and that the treatment of the conjunctiva, when carried out with proper care, is of great value in these cases.

CASE IX.—Dr. H., aged thirty, has been wearing glasses since 1881. Glasses prescribed under atropine, R. E. — $\frac{1}{18}$, L. E. — $\frac{1}{12}$. In 1886 tested again under atropine and the same correction ordered.

February 1st, 1892: Vision of the right eye without glasses $\frac{1}{10}$, left eye $\frac{1}{4}$. Treatment consisted in the application of nitrate of silver to the conjunctiva of the upper eyelids, applied lightly so as not to cause burning. No other treatment.

February 6th, 1892: This date is the third visit. The left eye is now normal without glasses. The vision of the right eye improved without glasses.

February 16th, 1892: The left eye has still normal vision without glasses. The vision of the right eye has improved from $\frac{1}{10}$ up to vision $\frac{2}{3}$ without glasses.

CASE X.—Mrs. B., aged thirty-three, has been growing near-sighted during the last three years.

January 11th, 1892: Vision without glasses $\frac{2}{40}$; with -1 D. S. vision is normal. She complains that daylight feels uncomfortable and that she is unable to sew or read with comfort. There is only slight redness of the conjunctiva. The treatment consisted in the application of nitrate of silver to the conjunctiva of the upper lids only at the outer corner. No other treatment.

February 15th, 1892: The vision has steadily improved to the normal in both eyes without glasses. In this case normal vision was obtained after three applications of nitrate of silver to the conjunctiva of the upper lids.

It is difficult to explain why the treatment of conjunctivitis relieves the strain of hypermetropia, and also relaxes the spasm in symptomatic myopia. The facts may be reconciled if it is admitted that manifest hypermetropia is a result of spasm tiring out the ciliary muscle so that it is less able to accommodate and overcome the hypermetropia, and also that in myopia the spasm is not sufficient to weaken the ciliary muscle. Authorities state that spasm is more common in hypermetropia than in myopia, and that spasm is rare in myopia. Spasm of the ciliary muscle is the cause in both hypermetropia manifest and in functional myopia. Treatment of the conjunctivitis relieves the spasm which causes hypermetropia manifest and functional myopia. It is not claimed that simple treatment of the conjunctiva lengthens the eyeball in hypermetropia or shortens it in myopia.

The treatment of conjunctivitis, or the application of nitrate of silver or other remedies to the conjunctiva, is of service in improving the vision of myopia of even 1 O. D.

CASE XI.—Miss K., aged thirteen, was reported in the *New York Medical Journal* for April 18th, 1891, as a case of myopia where the vision was improved very much by treatment without glasses. The amount of myopia in each eye was 10 D. S. = -5.5

D. C. Vision before treatment $\frac{5}{200}$ —. After treatment vision improved to $\frac{3}{20}$ without glasses. There are times when the vision is even better than this.

February 15th, 1892: She has a cold, and the conjunctivitis is worse. Vision of both eyes reduced to $\frac{20}{100}$ without glasses. An application of nitrate of silver to the conjunctiva of the right upper lid improved the vision of the right eye but not the vision of the left eye. Nitrate of silver applied to the conjunctiva of the left upper lid improved the vision of the left eye. The improvement in the vision took place almost immediately, and with both eyes was $\frac{20}{100}$ +.

To explain why patients with a high degree of myopia may have good vision at times without glasses, is not very difficult. The explanation, unfortunately, is theoretical at present. Donders, in his work on refraction, calls attention to the fact that the lens in many cases of myopia is further from the cornea than in the normal eye. He also says that the circular fibres of the ciliary muscle—the fibres which are used in accommodating—are reduced in size or number. When the lens moves backward from the cornea the myopia is less; and this may take place in the cases of myopia where the vision was very much improved by treatment without glasses.

The posterior staphyloma of myopia may increase or diminish in size, just as an anterior staphyloma does, with the effect of shortening the visual axis.

The treatment of conjunctivitis should be described. Improper treatment may do harm. The use of nitrate of silver or other local remedies, while beneficial in many cases, is not indicated in others. Nitrate of silver is a caustic, and when used in too strong solution is capable of aggravating the conjunctivitis, just as lime, ammonia, or other foreign substances will act.

In cases where the conjunctiva is decidedly red and swollen, with considerable mucous discharge, the silver may be applied more freely or in stronger solution than in cases where the objective symptoms of conjunctivitis are less marked. It is well to be tentative in all cases, and be guided by the immediate effects produced. If the nitrate of silver is too weak to be of benefit, no immediate effect on the conjunctiva is produced. When of proper strength the conjunctiva pales at once. This effect may be produced by gr. v. to $\frac{3}{4}$ i., or it may require gr. xxx., 3 i., 3 ij. to $\frac{3}{4}$ i., and sometimes the solid stick is necessary. If the nitrate is used in too weak solution treatment is tedious and may be of no benefit. If the nitrate of silver is too strong the results of treat-

ment are not good. As the treatment progresses the strength of the silver has to be modified. With the improvement in the conjunctivitis a less quantity on the conjunctiva, or a weaker solution, has to be used to obtain the best and quickest results. One cannot lay down absolute rules as to the strength to be employed, and what does good to-day may do harm to-morrow.

The manner of applying the nitrate of silver is important. A good way is to use a fine probe with the end wrapped in a small amount of cotton. The cotton is dipped in the solution of silver and applied to the conjunctiva very lightly. In cases where there was very slight congestion of the conjunctiva, as in the cases with functional myopia, the nitrate of silver caused no pain, no burning or smarting. When the applications felt uncomfortable to the patients, the vision, as a rule, was lowered and did not improve always after the disagreeable feelings produced had passed off.

The point chosen for the applications, or the place where, after an application was made, the vision improved, varied. In some cases the nitrate, applied to the inner corner of the upper lid, did not improve the vision; but when applied to the outer corner, the vision was very materially improved. One could not determine beforehand which would be the proper point. In some cases the application of the nitrate of silver to the lower lid seemed to be injurious, in other cases beneficial. In still other cases silver, applied to the larger veins on the ocular conjunctiva, seemed to be beneficial.

Care was taken to prevent the silver from irritating the cornea. If the applications caused pain the silver was neutralized with cocaine applied locally to the conjunctiva.

Spiritus ophthalmicus is a remedy of great value in chronic conjunctivitis. The old English writers on ophthalmology used it extensively. Dr. Mittendorf, of New York, has done more than any one else to popularize it in this country. The formula is as follows:

R Spiritus Camphor,
 " Vini Gallici.....āā 3 i.
 " Lavender,
 " Rosemary.....āā 3 ij.

M. Sig. Eye spirits, to be used only externally over the closed eyelids.

A collyrium for chronic conjunctivitis, which is recommended very highly by Dr. Fuchs, of Vienna, has benefited a number of my cases. I am indebted to Dr. Marple for the formula:

Horst's Collyrium.

℞ Ammonii Chloridi.....	0.1	gramme.
Zinci Sulphatis.....	0.25	"
Aquæ Destillatæ.....	40.0	"
M. et add—		
Camphoræ.....	0.08	"
Dissolved in—		
Spiritus Vini Diluentis.....	4.0	"
Croci.....	0.02	"

Digest for twenty-four hours, stirring frequently. Filter.

Sig. Eye drops, to be used pure or diluted with equal parts of water.

CONCLUSIONS.

1. In retinitis pigmentosa, choroiditis, and atrophy of the optic nerve, a slight chronic conjunctivitis may increase the symptoms of the poor vision.

2. In manifest hypermetropia, the cure of the chronic conjunctivitis may relieve the necessity of wearing convex glasses.

3. In spasm of the accommodation, progressive myopia, and congenital myopia, local treatment of the conjunctiva may improve the vision so much as to render concave glasses unnecessary.

131 WEST 56TH STREET.

